

What is claimed is:

1. A method of fabricating a pore array, comprising:
directing light onto a sheet of material in a pore array fabrication position wherein the light having an intensity and a wavelength sufficient to form pores within the sheet;
forming a pore array within the sheet wherein pores formed within the sheet at the locations where the light contacts a surface of the sheet and further wherein the light passes through the pores;
detecting the light passing through the pores; and
analyzing the detected light to determine if the pores meet a criterion which is a function of one or more of the group consisting of pore size, pore density, pore shape and the number of pores formed.
2. The method of claim 1, further comprising modifying the fabricating based on the whether the criterion is met.
3. The method of claim 1, wherein the source of the light is a LASER.
4. The method of claim 1, further comprising:
providing a plurality of sheets and repeating the directing, forming, detecting, and analyzing for each sheet.
5. The method of claim 1, wherein the formed pores have a diameter of less than about 100 microns.
6. The method of claim 3, wherein the LASER is selected from the group consisting of a UV LASER and a visible light LASER.

7. The method of claim 1, wherein the detecting comprises using a detector selected from the group consisting of a photodiode, a pyroelectric detector and a downconversion/photodiode, and wherein the analyzing comprises using a system comprising an electronic circuit.

8. The method of claim 2, wherein the modifying comprises changing one or more of the intensity, the pulse duration, and the pulse frequency of the directed light.

9. The method of claim 8, wherein the modifying comprises reducing the intensity wherein the fabrication method is essentially halted.

10. The method of claim 2, wherein the modifying comprises moving a new sheet into the drilling position.

11. The method of Claim 10, wherein the sheet comprises a polymer film.

12. The method of claim 6, wherein the UV LASER is selected from the group consisting of excimer LASERs, frequency multiplied YAG LASERs, frequency multiplied YLF LASERs.

13. The method of claim 12, wherein the LASER is a pulsed Excimer LASER.

14. A device for fabricating a pore array, comprising:

a means for directing light onto a sheet of material and forming a pore array therein, the pore array comprising a plurality of pores, said means including a light source associated with a beam splitter;

a means for detecting light passing through the pores of the pore array as the pores are formed;

a means for analyzing the detected light to determine if the pores meet a criteria; and

a means for continuously repositioning sheets relative to the means for directing light.

15. The device of claim 14, wherein the means for detecting light simultaneously detects light passing through a plurality of the pores.

16. The device of claim 14, wherein the means for analyzing detected light comprises a microprocessor.

17. The device of claim 14, wherein the beam splitter is selected from the group consisting of a mask and lens combination and a diffractive optic element.

18. The device of claim 14, wherein the means for detecting light is selected from the group consisting of a photodiode, a pyroelectric detector and a downconversion/photodiode detector.

19. The device of claim 14, wherein the means for continuously repositioning comprises a means for serially moving one sheet after another.

20. A method of simultaneously manufacturing and inspecting a pore, comprising:
directing light energy on a surface of a sheet material in an amount sufficient to create at least one pore in the material;

detecting light passing through the sheet material opposite the surface at which the light energy is directed; and

analyzing the detected light to determine at least one criterion of the at least one pore.

21. The method of claim 20, wherein the at least one criterion is selected from the group consisting of pore size and pore shape.

22. The method of claim 21, further comprising discontinuing the direction of light at the at least one location when the at least one pore achieves a predetermined size.

23. The method of claim 22, wherein the at least one pore comprises a plurality of pores, and the predetermined size is the average size of at least some of the pores

24. The method of claim 20, wherein the light is directed at a plurality of locations on the surface of the sheet material to form a plurality of pores simultaneously.

25. The method of claim 23, wherein the light is detected passing through the plurality of pores.

26. The method of claim 20, wherein the light is directed at the plurality of locations and the analyzing is carried out to determine at least one of the criteria selected from the group consisting of whether the pores have been made through the sheet material, whether the pores made have a sufficient size, and whether the pores made provide a sufficient pore density.

27. The method of claim 26, further comprising discontinuing the directing of light when the analysis determines that the at least one criteria has been met.

28. The method of claim 20, wherein the light energy is LASER light.

29. The method of claim 28, wherein the LASER light is selected from the group consisting of Excimer LASERs, frequency multiplied YAG LASERs, and frequency multiplied YLF LASERs.

30. A system for manufacturing and analyzing a pore array, comprising:
a light source capable of directing light onto the surface of a sheet material in an amount sufficient to drill a plurality of pores in the sheet material; and

a light detector adapted to be positioned adjacent the sheet material on a side of the sheet material which is opposite the surface at which the light is directed.

31. The system of claim 30, further comprising:
a means for analyzing light detected to determine at least one criterion of the plurality of pores.

32. The system of claim 31, further comprising:
a feedback circuit electrically connected to said light source and said light detector, wherein the feedback circuit is adapted to analyze light passing through the sheet material and the plurality of pores when formed, and wherein the feedback circuit provides feedback to the light source to discontinue direction of light when at least one predetermined criteria of the plurality of pores has been achieved.

33. The system of claim 32, wherein the feedback circuit comprises an electronic circuit.

34. The system of claim 30, further comprising at least one shutter to discontinue the direction of light adapted to be placed in the directed light between the light source and the sheet material.

35. The system of claim 30, further comprising a homogenizer adapted to be placed in the directed light between the light source and the sheet material.

36. The system of claim 30, further comprising an illuminated lens adapted to be placed in the directed light between the light source and the sheet material.

37. The system of claim 30, further comprising at least one mask adapted to be placed in the directed light between the light source and the sheet material.

38. The system of claim 30, wherein the light detector comprises a photodiode.
39. The system of claim 30, wherein the light source is a LASER.
40. The system of claim 39, wherein the LASER is a UV LASER.
41. A method for the fabrication of an array of pores, comprising:
directing light from a light source of appropriate wavelength to fabricate the array of pores in a sheet;
detecting the light transmitted through the pores wherein the detected light demonstrates the number of the pores; and
stopping the directing of light when the transmitted light demonstrates that the pores are of the correct number.
42. A method of simultaneously manufacturing and inspecting a plurality of pores, comprising:
directing light energy on a surface of a material in an amount sufficient to create the plurality of pores in the material;
detecting light passing through the plurality of pores opposite the surface at which the light energy is directed; and
analyzing the detected light to determine at least one criterion of the plurality of pores being formed.
43. The method of claim 42, wherein the analyzing comprises determining the collective average size of a number of pores at the same time.

44. The method of claim 43, further comprising discontinuing directing light at the location corresponding to where the multiplicity of pores having a predetermined collective average size is determined, by analysis, to have been formed.

45. The method of claim 42, wherein the at least one of criterion is selected from the group consisting of whether the plurality of pores have been formed through the material; whether the plurality of pores formed have a sufficient size; and whether the plurality of pores formed provide a sufficient pore density.

46. The method of claim 42, further comprising discontinuing the direction of light when the analysis determines that the at least one criterion has been met.

47. The method of claim 42, wherein the light is a LASER.

48. A system for manufacturing and analyzing pores, comprising:
a light source capable of directing light onto the surface of a material in an amount sufficient to drill at least one pore in the material;
a feedback control means connected to the light source for discontinuing the direction of light
a light detector connected to the feedback control means, adapted to be positioned adjacent the material and on a side of the membrane material which is opposite the surface at which the light is directed, and adapted to analyze light passing through the material and the at least one pore, when formed; and
wherein the feedback control means discontinues the direction of light when at least one predetermined criterion of the at least one pore has been met.

49. The system of claim 48, wherein the feedback control means is a shutter.

50. The system of claim 48, further comprising a homogenizer adapted to be placed in the directed light between the light source and the material.

51. The system of claim 48, further comprising an illuminated lens adapted to be placed in the directed light between the light source and the material.

52. The system of claim 48, wherein the connection between the light detector and the feedback control means comprises an electronic circuit.

53. The system of claim 48, wherein the light detector comprises a photo-diode

54. The system of claim 48, wherein the light source is a LASER.

55. The system of claim 54, wherein the LASER is a UV LASER.